

REMARKS

Claims 2-9 are all the claims pending in the application. Claims 2 and 6-9 are rejected under 35 U.S.C. § 112, second paragraph as being indefinite. Claims 6-9 are rejected under 35 U.S.C. § 102(b) as being anticipated by Asano (U.S. Patent No. 5,188,297). Claims 2 and 6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Bata (U.S. Patent No. 5,427,319).

As a preliminary matter, the Examiner objects to the drawings for the reasons set forth on page 2 of the Office Action. Similarly, the specification is objected to for reasons related to the objection to the drawings. Specifically, the Examiner alleges that the specification fails to provide proper antecedent basis for the “arm” recited in claim 2. *See Office Action, page 3.* In response, Applicant points out that, although the specification does not expressly mention the word “arm”, the “arm,” as recited in claim 2, is depicted in Fig. 1. That is, the sleeve 17 is comprised of two segments, one extending vertically and the other extending horizontally. In the context of the specification and drawings, it is clear that the claimed “arm” has to be one of the extending segments of the sleeve 17, which is shown in the drawing. Therefore, at least based on the foregoing reasons, Applicant submits that the claimed “arm” is an inherent aspect of the sleeve 17, and that the Examiner’s objection to claim 2 is improper. However, in an effort to advance prosecution, Applicant amends claim 2, as indicated herein, thereby removing the word “arm.”

§ 112, second paragraph, Rejections – Claims 2 and 6-9

With respect to claims 2 and 6-9, the Examiner states that it is uncertain whether Applicant is claiming a combination of a fuel injection valve, a needle, an armature and a

solenoid or the sub-combination of a fuel injection valve. Applicant is not claiming a combination of a fuel injection valve, a needle, an armature, and a solenoid, but is claiming a fuel injection valve comprising the elements set forth in the claims. Also, in response to the Examiner's question, "...does the fuel injection valve comprise a means for damping or does the solenoid comprise a means for damping?," Applicant amends independent claims 6, 7, 8, and 9, to more particularly reflect that "said fuel injection valve" comprises the respective claimed "buffer portion" or "means for damping." This amendment is being made for clarification purposes only.

§ 102 Rejections (Asano) – Claims 6-9

Independent claims 6-9 are rejected for the reasons set forth on page 4 of the Office Action. Essentially, the Examiner maintains the rejection based on the same reasoning set forth in previous Office Actions. In the *Response to Arguments* section of the Office Action, the Examiner states, in part,

In response to Applicant's argument that the O-ring of Asano has a very small contact area and therefore it is impossible for the O-ring to generate any effective damping effect, Applicant appears to be drawing conclusions which are not supported by the reference. *See Office Action, page 5.*

With respect to claim 6-9, first, Applicant maintains that the O-ring (39) of Asano is merely a sealing member, and does not function as a buffer member, as does the claimed buffer portion. *See Arguments submitted in previous Amendments.* Further, Applicant notes that, in the fuel injection valve as disclosed by Asano, the portions of the valve body to be sealed by O-ring (39) and O-ring (29), respectively, have almost the same diameters, thus the diameters of respective O-rings 39 and 29 are the same. Asano specifically discloses that O-rings 39 and 29

perform the functions of sealing, and at least based on the fact that these O-rings have the same diameters, both O-rings 29 and 39 are clearly dedicated to sealing only.

Further, with respect to claim 6, Applicant amends this claim to recite, in part, “wherein substantially all of said buffer portion contacts fuel in said fuel passage,” and submits that Asano does not teach or suggest at least this limitation. That is, since Applicant’s invention, as recited in claim 6, does not employ an O-ring for the purpose of sealing, the claimed buffer portion is used under a condition of being immersed in the fuel so that almost the entire surface of the buffer portion contacts the fuel. In contrast to Asano, the surface area of the buffer portion contacting the fuel is larger, resulting in augmentation of the function of elasticity, which intensifies the damping action. Therefore, for at least the above-stated reasons, Applicant submits that independent claim 6 is patentable over Asano. Applicant amends claim 7 to reflect the limitations added to claim 6, as indicated herein, and submits that claim 7 is patentable for at least reasons similar to those set forth above with respect to claim 6.

Further, with respect to independent claims 8 and 9, Applicant submits that Asano does not teach or suggest at least “ means for damping a change of fuel pressure caused by valve bounce when the needle is closed,” as recited in claims 8 and 9. Applicant submits that Asano only mentions that the O-ring disclosed therein performs a sealing function, and does not mention damping a change of fuel pressure caused by valve bounce when the needle is closed, as recited in independent claims 8 and 9. Further, Applicant reminds the Examiner that during the telephone interview of January 29, 2002, he indicated that using means-plus-function might be a way to distinguish over Asano, as Asano does not specifically disclose an O-ring that performs a

performs a damping function. Such a means-plus-function claim was added in an effort to ensure that patentable weight would be given to a distinguishable functional aspect of Applicant's invention, as recited in claims 8 and 9, yet the Examiner maintains his rejections, even though Asano clearly does not disclose a means for damping a change of fuel pressure caused by valve bounce when the needle is closed. Applicant respectfully requests that the Examiner reconsider his position and withdraw his rejections of claims 8 and 9.

§ 102(b) Rejections (Bata) – Claims 2 and 6

To support the rejections of claims 2 and 6 under 35 U.S.C. § 102(b), the Examiner simply shows one of the figures of Bata.

In response, with respect to independent claim 6, Applicant submits that the Examiner has incorrectly labeled the drawing. That is, nowhere does Bata disclose that the component labeled as the "buffer portion" in the drawing on page 4 of the Office Action, is, in fact, "a buffer portion damping a change of fuel pressure caused by valve bounce when the needle is closed," as recited in claim 6. Applicant respectfully requests that the Examiner provide support for his contention that the alleged "buffer portion" is in fact a buffer portion, and that the alleged "buffer portion" dampens a change of fuel pressure caused by valve bounce when the needle is closed, as described in claim 6.

With respect to claim 2, Applicant amends claim 2 in independent form, as indicated herein, and submits that Bata does not teach or suggest "said elastic member being attached to a portion of said sleeve located near an end portion of a coil which is nearest to said needle valve, and said elastic member extending in a perpendicular direction away from said sleeve toward said core," as recited in amended claim 2. That is, even if, assuming arguendo, the alleged buffer

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portion (elastic member) of Bata is attached to a sleeve, the alleged buffer portion is not attached to a portion of an alleged sleeve located near an end portion of a coil which is nearest to said needle valve, but is attached to a portion of the sleeve that is above the coil 20, and is closer to a top end of the fuel injector. Therefore, for at least these reasons, Applicant respectfully requests that the Examiner withdraw the rejection of claim 2, and indicate that it is allowed.

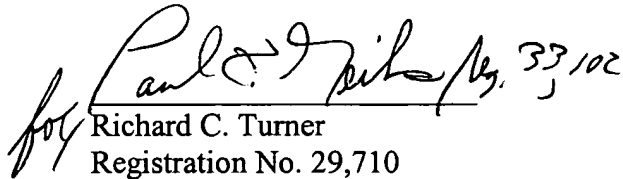
Yet further, the portion being asserted as buffer portion in Bata is considered to be an O-ring and since this O-ring is provided for the purpose of sealing similar to Asano's O-ring (39), Applicant submits that Bata does not satisfy the claimed buffer portion, as similarly argued with respect to applied reference Asano.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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APPENDIX
VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

The claims are amended as follows:

2. (Five-times Amended) A fuel injection valve for opening and closing a needle valve by driving an armature with a solenoid, said fuel injection valve comprising:
a buffer portion damping a change of fuel pressure caused by valve bounce when the needle is closed, said buffer portion being an elastic member disposed at a position at which said buffer portion faces and contacts a fuel passage located at an upstream side with respect to an end face of said armature located on a side of a nozzle opening side~~The fuel injection valve according to claim 6,~~

wherein said elastic member is provided between a sleeve and said core in order to form said buffer portion, said sleeve being disposed between a core and a valve holder of the solenoid, said elastic member being attached to a portion of said sleeve located near an end portion of a coil which is nearest to said needle valve, and said elastic member extending in a perpendicular direction away from an arm of said sleeve toward said core.

6. (Three-times Amended) A fuel injection valve for opening and closing a needle valve by driving an armature with a solenoid, said fuel injection valve comprising:

a buffer portion damping a change of fuel pressure caused by valve bounce when the needle is closed, said buffer portion being an elastic member disposed at a position at which said buffer portion faces and contacts a fuel passage located at an upstream side with respect to an end face of said armature located on a side of a nozzle opening side,

wherein substantially all of said buffer portion contacts fuel in said fuel passage.

7. (Three-times Amended) A fuel injection valve for opening and closing a needle valve by driving an armature with a solenoid, said fuel injection valve comprising:

a buffer portion damping a change of fuel pressure caused by valve bounce when the needle is closed, said buffer portion being an elastic member disposed at a position at which said buffer portion faces and contacts a fuel passage located at an upstream side with respect to an end face on a nozzle opening side of said armature,

wherein substantially all of said buffer portion contacts fuel in said fuel passage.

8. (Amended) A fuel injection valve for opening and closing a needle valve by driving an armature with a solenoid, said fuel injection valve comprising:

means for damping a change of fuel pressure caused by valve bounce when the needle is closed, said means being an elastic member disposed at a position at which said means faces and contacts a fuel passage located at an upstream side with respect to an end face of said armature located on a side of a nozzle opening side.

9. (Amended) A fuel injection valve for opening and closing a needle valve by driving an armature with a solenoid, said fuel injection valve comprising:

means for damping a change of fuel pressure caused by valve bounce when the needle is closed, said means being an elastic member disposed at a position at which said means faces and contacts a fuel passage located at an upstream side with respect to an end face on a nozzle opening side of said armature.